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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/616,021	07/09/2003	Jri Lee	G&C 30448.116-US-U1	1118
22462	7590	09/12/2005	EXAMINER	
GATES & COOPER LLP HOWARD HUGHES CENTER 6701 CENTER DRIVE WEST, SUITE 1050 LOS ANGELES, CA 90045			WONG, LINDA	
			ART UNIT	PAPER NUMBER
			2634	

DATE MAILED: 09/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/616,021

Applicant(s)

LEE ET AL.

Examiner

Linda Wong

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 June 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 11-16 is/are rejected.
- 7) ☐ Claim(s) 7-10, 17-20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Arguments

1. Applicant's arguments, see Applicant's Arguments, filed 6/23/05, with respect to the rejection(s) of claim(s) 1-20 under Huang have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Huang (US Patent No.: 6442225) in view of Baumgartner et al (US Patent No.: 5712580).

Drawings

2. The drawings were received on 6/23/05. These drawings are accepted.

Specification

3. The amendments to specifications were received on 6/23/05. These amendments to the specification are accepted.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained, though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. **Claims 1-6,11-16** are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang (US Patent No.: 6442225) in view of Baumgartner et al (US Patent No.: 5712580).
- a. **Claims 1 and 11**, Huang discloses a multi-phase voltage controlled oscillator (VCO) accepting a control signal and generates a plurality of multi-phase clock signals for detecting the transition edge of the data signal (Fig. 5, label 24 and Abstract, lines 4-7), a phase detector comparing the data signal and clock signals, outputting a plurality of data signals and detecting the transition edge of the data (clock) signal (Fig. 5, label 24 and Col. 1, lines 26-39), a V/I that converter, in the form of a charge pump converts the output from a phase detector and outputs a control current (Fig. 5, labels 22 and Vd) and a loop filter outputting a control signal to the voltage controlled oscillator (Fig. 5, label Vd and 23). Although Huang does not explicitly state an input data signal having a different frequency of the clock signal and retiming/demultiplexing the input data signal using a phase detector, Baumgartner et al discloses a phase detector, wherein the input data signal is retimed and 1:2 demultiplexed to output data signals, DX and DY, with frequencies $\frac{1}{2}$ the frequency of the input data signal. The demultiplexing and retiming is responsive of the clock phase outputted from the VCO (not shown in Daumgartner et al but mentioned in specification) (Fig. 1, labels data, C90, DX, DY, UP and DOWN, Col. 2, lines 39-45, lines 52-60) Based on Huang's invention, Figure 7 shows the components and functionality of the phase detector. One can see that the latches displayed (Fig. 7, labels

212) show the data is latched and D1 and D2 are outputted, which is the same as Fig. 1 disclosed by Baumgartner et al. Thus, it would be obvious to one skilled in the art to determine the functionality of the phase detector disclosed by Huang functions as described by Baumgartner et al based on the similarities found in the diagrams of the phase detector.

- b. **Claims 2 and 12**, Huang discloses a circuit taking in 1 data signal, retimes and demultiplexes the data signal to a plurality of output data signals. (Fig. 5, label 21, CKN – CK1)
- c. **Claims 3 and 13**, Huang discloses an N input phase detector and VCO, which can function as a half-quadrature phase detector. The phase detector disclosed by Huang also detects the edges of the inputted data signal and determines whether the clock signal is early or late. (Col. 1, lines 26-39)
- d. **Claims 4 and 14**, Huang discloses a phase detector comprised of a plurality of flip-flops to compare the data signal and the plurality of clock signals. (Fig. 7, labels data, 212, CK1 – CKN)
- e. **Claims 5 and 15**, Huang discloses a phase detector that compares every two adjacent samples stored by two adjacent flip-flops by means of an XOR gate to detect the edge of the inputted data signal. (Fig. 7, labels data, 212, U1, U2, and 213)
- f. **Claims 6 and 16**, Huang discloses a phase detector that uses the leading and lagging edges of the clock signal to compare with the input data signal. (Col. 1, lines 26-39)

Allowable Subject Matter

2. **Claims 7, 8, 9, 10, 17, 18, 19, and 20** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
- a. "50-Gb/s SiGe BiCMOS 4:10 Multiplexer and 1:4 Demultiplexer for Serial Communication Systems" Meghelli, Mounir, Rylyakov, Alexander V. and Shan, Lei, IEEE Journal of Solid-State Circuits, Vol. 37, No. 12, December 2002
 - b. "Integrated Circuits for 80 Gbit/s Data Transmission",
<http://www.iaf.fraunhofer.de/pdf/jahresbericht-2002/integrated.pdf>
 - c. Duffy et al (US Patent No.: 6560306)
 - d. "4-bit Multiplexer/Demultiplexer Chip Set for 40-Gbit/s Optical Communications Systems", Ishii et al. IEEE Radio Frequency Integrated Circuits Symposium, 2003 IEEE.
6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Linda Wong whose telephone number is 571-272-6044. The examiner can normally be reached on 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on (571) 272-3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Linda Wong


STEPHEN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600